

How to curb China's current inflation without reducing growth

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The increase in inflation in China during 2010 has raised concerns about the risk that rapid growth and abundant international liquidity could generate an accelerating inflationary process that would call for domestic demand restraint via monetary tightening¹. There is the fear that monetary tightening may end up reducing growth. The same concern is rising in many developing countries where current inflation rates are increasing at the same time as local currencies tend to appreciate.

This is happening despite the efforts of most Government to prevent short term inflows of capital. Trying to dampen the effect of excess liquidity on domestic demand, Central Banks tend to increase intervention interest rates, but these interest rates hikes widen the interest rate differentials and induce greater short term capital inflows. To counteract these undesirable side effects of monetary tightening, the Central Banks try to use capital controls but these are only partially effective, if at all.

¹ See, for example:

(<http://online.wsj.com/article/SB10001424052748704739504576068171365313408.html>)

(<http://economictimes.indiatimes.com/markets/forex/yuan-may-rise-10-in-2011-to-fight-inflation/articleshow/7236779.cms>)

(http://news.xinhuanet.com/english2010/china/2011-01/07/c_13680881.htm)

(<http://www.ft.com/cms/s/0/680e8a74-1ac0-11e0-b100-00144feab49a.html>)

(<http://blogs.wsj.com/economics/2011/01/07/harvards-feldstein-says-us-china-trade-gap-on-path-to-resolution/>)

(<http://www.mi2g.com/cgi/mi2g/frameset.php?pageid=http%3A//www.mi2g.com/cgi/mi2g/press/050111.php>)

(<http://www.investmentandbusinessnews.co.uk/china/are-fears-of-chinese-inflation-exaggerated/12223>)

(<http://www.smh.com.au/business/world-on-high-alert-as-china-inflation-soars-20110102-19d0l.html>)

(<http://imarketnews.com/node/24576>)

In practice, inflation statistics show that despite all the actions by Central Banks, inflation rate differentials with the US significantly exceed the rate of local currency appreciation, making the real appreciation of the local currency an inevitable trend.

This is not an atypical outcome for economies that are growing fast after starting from very low levels of per capita income. Trying to prevent this outcome may endanger the growth process. The clearest example of this phenomenon is the Japanese economy after WWII.

Japan after WWII

As shown in table 1, Japan grew very fast during the 50s and 60s (at similar rates as those of China during the last decades). During those decades the Yen remained pegged to the dollar within the Bretton Woods International Monetary System. Inflation in Japan more than doubled that of the US. During the 50s annual inflation was 3.3 % in Japan and only 1.6 % in the US. During the 60s it was 6.0% in Japan and 2.9 % in the US.

During the 70s inflation was still higher in Japan (8.9 as compared to 8.0 in the US) in spite of the fact that the Yen appreciated at an annual rate of 5.6%. If we compute the inflation rate differential above the rate of appreciation, it becomes clear that inflation measured in dollars was 6.5% annually higher in Japan than in the US. In other words, the Yen appreciated in real terms at a rate of 6.5 % annually.

With continued nominal appreciation of the Yen in the following decades, the inflation rate differential tended to disappear and the Yen stopped the process of real appreciation. But along these three decades GDP growth declined sharply and almost disappeared.

Table 1: Inflation in Japan and the US

Period	Annual GDP Growth in Japan (%)	Annual Inflation in Japan (%)	Annual inflation in the US (%)	Rate of Yen Appreciation (%)	Inflation Differential above Appreciation (%)
1950-1960	10.8	3.3	1.6	0	1.7
1960-1970	10.5	6.0	2.9	0	3.1
1970-1980	4.6	8.9	8.0	5.6	6.5
1980-1990	3.9	2.0	4.5	4.0	1.5
1990-2000	1.2	0.7	2.7	1.7	-0.3
2000-2010	0.6	-0.2	2.3	3.4	0.9
1950-2000	5.2	3.4	3.7	2.5	2.2

China after 1995

Although China started to grow rapidly since the late seventies, for a comparison with Japan the relevant years to be looked at in China are 1995 until 2010, because it was only in 1995 that the Chinese economy started to function with a unified exchange system and at least partial current account convertibility, as Japan had functioned since 1950. Additionally during this period China followed an exchange rate policy close to that of Japan under Bretton Woods, in spite of all the pressure it received from abroad to float its currency or, at least, to appreciate it more rapidly.

During the period 1995-2010 China grew at 9.8 % annually, a rate similar to that of Japan between 1950 and 1970, but its inflation rate was lower than that of the US (1.9% in China and 2.4% in the US). Even after taking into account the rate of appreciation of the Yuan, the inflation rate differential was only 1.1% higher in China as compared with 1.6% during the 50s and 3.1% during the 60s in Japan.

Looking more closely to the last six years, a period of more rapid appreciation of the Yuan, the picture is closer to that of Japan in its early stage of development. In the period 2004-2010 the annual rate of inflation in China was 3% as compared to 2.4% in the US. As the annual rate of appreciation of the Yuan was 3.7%, the inflation differential above the rate of appreciation was 4.3%. This rate differential is still lower than that of Japan in its third decade of development, when it was 6.0%.

Table 2: Inflation in China and the US

Period	Annual GDP Growth in China (%)	Annual Inflation in China (%)	Annual inflation in the US (%)	Rate of Yuan Appreciation (%)	Inflation Differential above Appreciation (%)
1994-2004	9.0	1.2	2.4	0.1	-1.1
2004-2010	11.4	3.0	2.4	3.7	4.3
1995-2010	9.8	1.9	2.4	1.6	1.1

What explains the inflation differentials?

Already in 1964 Paul Samuelson² and Béla Balassa³ gave the arguments for explaining the higher inflation in countries that were catching up US productivity levels in their tradable sectors. Their

² Samuelson, P. A. (1964), "Theoretical Notes on Trade Problems", *Review of Economics and Statistics* **46** (2): 145–154, doi:[10.2307/1928178](https://doi.org/10.2307/1928178).

³ Balassa, B. (1964), "The Purchasing Power Parity Doctrine: A Reappraisal", *Journal of Political Economy* **72** (6): 584–596.

argument was that, even with some lag⁴, the nominal wages paid in such a country would rise at the pace of productivity growth in the tradable sector. As productivity growth would not be as rapid in the non tradable sector of the economy, wage costs and prices of non tradable goods would necessarily rise more than in the US. So even when the prices of tradable goods would evolve the same in the developing economy than in the US, the higher speed of price increase in the prices of non tradable goods in the developing economy would cause an inflation differential between this economy and the US. This phenomenon is described in the economic literatures as a version of the “Balassa-Samuelson effect”.

Deterioration of their terms of foreign trade is another reason for having an inflation differential in rapid growing economies which have to import food and raw materials because they lack the necessary natural resources to produce them. The significant rise of oil and other primary commodities in the 70s meant a sharp deterioration of its terms of trade that explained part of the inflation differential as imported inflation in spite of the appreciation of the Yen. The same phenomenon has been happening in China in the last years as a consequence of the rapid upward trend in primary commodity prices that are the bulk of Chinese imports. This was clearly a good part of the explanation for the higher inflation differential in Japan during the 70s and explains also a good part of the higher inflation differential in China since 2004.

Can monetary policy be effective in curbing the current Chinese inflation?

The answer is undoubtedly yes if China would rapidly move toward greater exchange rate flexibility. In this case, a monetary tightening would be immediately reflected in a rapid appreciation of the Yuan. The strengthening of the Yuan would reduce the magnitude of imported inflation by dampening the price increases of imported commodities. It will, at the same time, generate a process of deflation of other tradable goods, mainly exportables, and will reduce the pressure for nominal wage increases in the non tradable goods sectors. The differential inflation between non tradables and tradables that is associated to the Balassa Samuelson effect would happen not through higher inflation of the non tradables but as a consequence of deflation of the tradables.

But significant and persistent deflation of the exportable goods would not come without tears. Just by glancing at the Japanese experience as reported in table 1, it is clear that persistent deflation of the exportable goods was associated with a rapidly declining rate of GDP growth. In the decade of the 70s, when the rate of appreciation was 5.6% per annum (as compared to 0% during the two previous decades) annual growth went down from 10.5% to 4.6%. In the 80s, with a rate of appreciation of 4% annual growth went further down to 3.9%, and in the next two decades, as the process of nominal appreciation continued, the economy became almost stagnant.

There may be many reasons why this decline took place, but it is not unconceivable that part of the explanations comes from the high real cost of credit for the producers of exportable goods provoked by the deflationary process. As the nominal interest rate cannot be negative, a rate of deflation of the

⁴ Due to the existence of surplus labor in the rural areas that would for a while generate an “a la Lewis” nominal wage sluggishness.

exportable goods means a net addition of $x\%$ to the real rate of interest. Just as an example, on average, in the decade 2000-2010 when the nominal rate of interest in Japan was close to 1 %, the real rate of interest for the producers of exportable goods resulted around 4.4% because the rate of appreciation of the Yen was 3.4 % per annum.

Now, if monetary policy is committed to avoid the deflation of the exportables, that is, to keep the nominal exchange pegged to the Dollar, it is inevitable that the overall rate of inflation of the economy will be higher than in the US, because inflation of the non tradables and the imported commodities will rise as a consequence of the Balassa-Samuelson effect and the deterioration of foreign terms of trade. The following question naturally arises: can monetary policy instruments, like capital controls and sterilization via open market operations or changes in reserve requirements, prevent the inflation that originates in the Balassa Samuelson and foreign terms of trade deterioration effects? The answer is no, unless monetary policy succeeds in reducing GDP growth, that is, unless the economy suffers the same consequences as those of the deflation of the exportables that tried to be prevented in the first place.

No doubt, sterilization mechanisms, particularly changes in reserve requirements, may be justified as countercyclical macro policies to prevent excessive credit creation by the Banking system that could cause asset bubbles, as it is being recommended by experts in macro-prudential management, but it should not be expected that they will be effective in preventing the inflation differential that originates in real phenomena inherent to the process of growth.

What can Chinese authorities do to curb inflation without sacrificing growth?

If Chinese authorities want to preserve rapid growth for a long period of time, at least until the productivity gap with the US is significantly reduced, they will have to admit higher inflation than that that prevails in mature economies. The first question that naturally arises is: will higher inflation cause social unrest? The answer is: it depends where this inflation originates.

The part of the inflation that originates in the wage increases that come as a consequence of higher productivity growth in the production of exportables will be standard of living improving for the average urban family. The same should be expected from increases in locally produced food prices since farmer's income has lagged behind that of urban workers and, therefore, a reversal of this trend should be seen as fair. Those wage and price adjustments would prevent the emergence of income differential between the exportable sectors and the rest of the economy, and social unrest is more likely associated with the amplification of income differentials.

Social unrest could surely be generated by price increases that originate in imported commodities which will, in any case, reduce the standard of living of workers in every sector of the economy.

The second question that naturally arises is: there is anything the government can do to try to curb inflation if it does not want to allow for deflation of the tradables? The answer is yes, but not through monetary policy.

Monetary policy is already committed to the objective of preventing deflation of the tradables and to dampen the credit cycle that is behind asset bubbles and their busts. So the inflation of the non tradables that arises from the Balassa Samuelson effect as the inflation of the imported goods that comes from the deteriorating terms of foreign trades, if the economy is going to preserve rapid growth, can only be curbed through more focused sectoral policies.

Let's start with the inflation of the non tradables and of locally produced food. The distributional social benefits that this inflation conveys, as described above, could be achieved with lower inflation if the Chinese authorities found ways of encouraging productivity increases in the production of non-tradables and local production of food. To the extent that productivity in those sectors of the economy tend to increase close to the increase in the productivity in the production of exportables, the Balassa Samuelson effect would call for lower inflation differential with the mature economies.

The right approach to curb imported inflation, which it only conveys social costs and may be the cause of social unrest, is twofold: China should use trade negotiations to encourage increased supply of those commodities, including direct Chinese investment abroad in natural resource rich countries. Until foreign supply increases sufficiently as to stabilize prices, China should subsidize the importation of those inputs that have a strong influence in the cost structure of local activities and are a source of imported inflation

If instead of using these more sector focused policies, Chinese authorities try to use monetary policy to reduce inflation below the levels consistent with the rapid growth that generate Balassa Samuelson and foreign terms of trade effects, the outcome will be lower growth. This outcome will not be good, neither for China nor for the World.

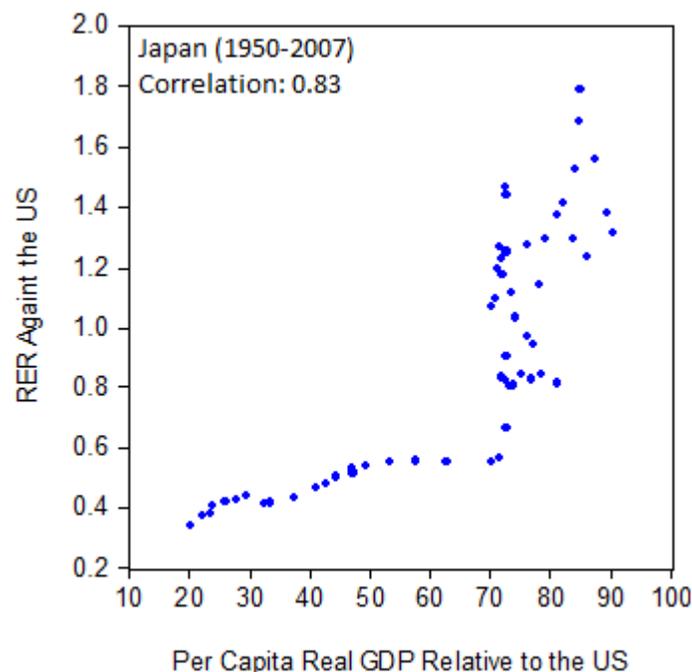
Appendix

In this appendix empirical evidence is provided to support the main text explanations for inflation differentials. First, some evidence is presented in favor of the “Balassa-Samuelson effect” and, after that, some facts regarding the terms of trade dynamics and how they relate to economic growth are analyzed.

The “Balassa Samuelson effect”

As it was pointed out before, Japan’s catching up process against the US, which began right after the WWII, was accompanied by a real appreciation that is consistent with the “Balassa-Samuelson Effect”. An interesting way to witness this fact is by doing the scatter plots of Japan’s real exchange rate against the US and its per capita real gross domestic product relative to the US. This can be done using data from the *World Penn Table 6.3*⁵. All the necessary data for the rest of the analysis in this subsection of the appendix comes also from the same source. The experiment’s results can be seen In Figure 1.

Figure 1: Revising the “Balassa-Samuelson effect” for Japan (1950-2007)

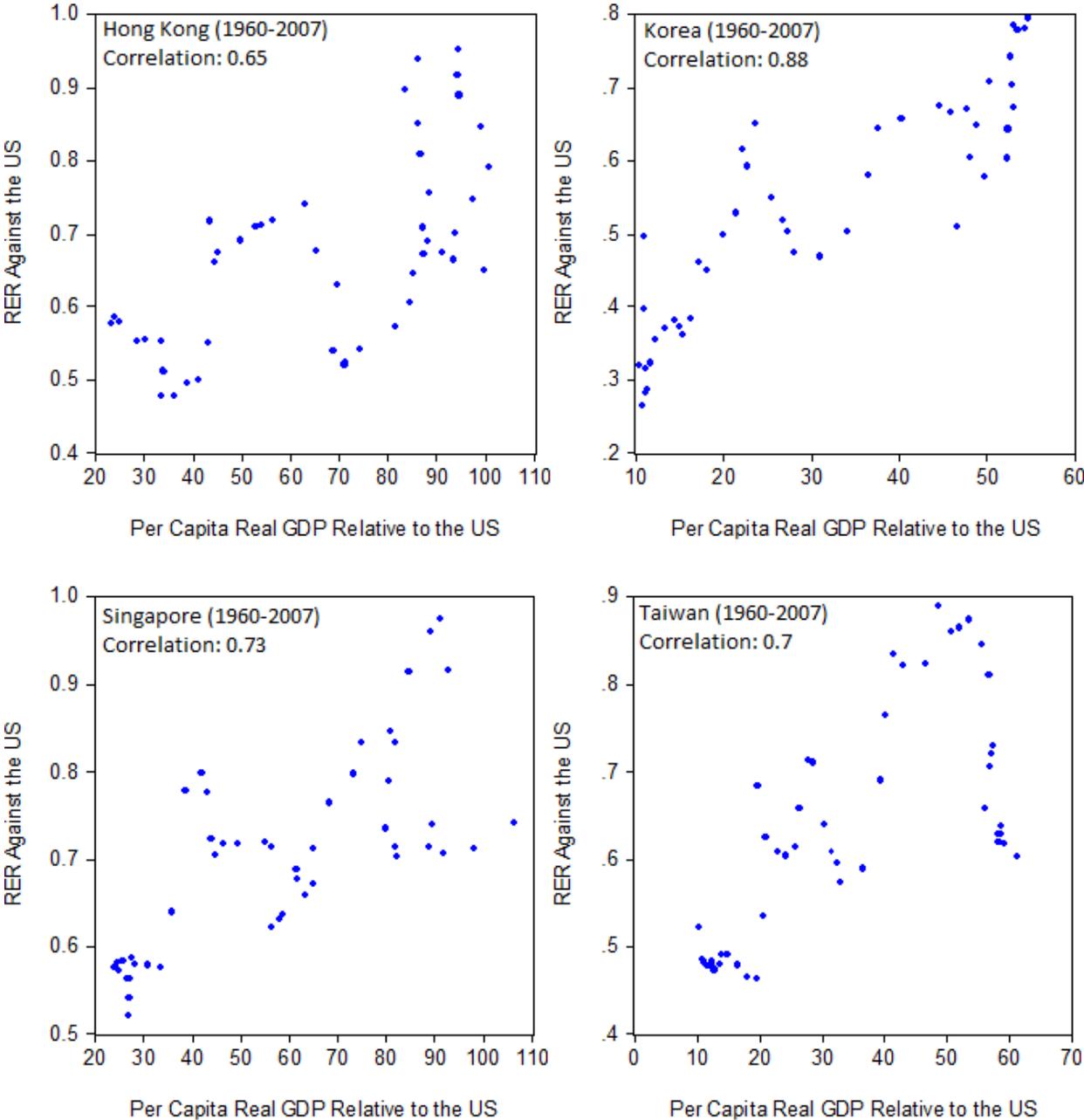


Although Figure 1 is quite suggestive, it may still be considered small evidence to prove a really general theory.

⁵ Alan Heston, Robert Summers and Bettina Aten, Penn World Table Version 6.3, Center for International Comparisons of Production, Income and Prices at the University of Pennsylvania, August 2009.

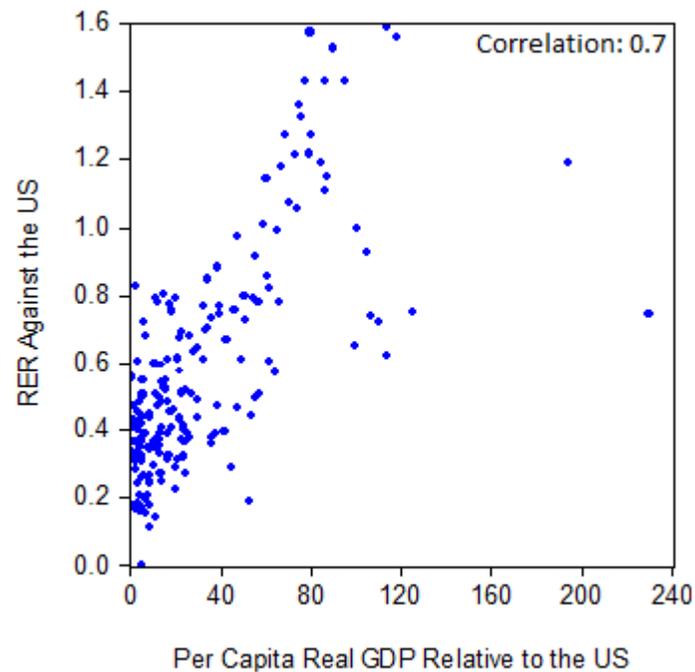
In Figure 2 the same exercise is re-done for the “Asian Tigers” (Hong Kong, Korea, Singapore and Taiwan), four Asian countries that, same as China and Japan, experimented a fast catch up process (starting, approximately, in the 60s).

Figure 2: Revising the “Balassa-Samuelson effect” for the “Asian Tigers” (1960-2007)



Finally, the relation between the gross domestic product relative to the US and the real exchange rate against the US with an across-country sample of 189 observations, for the year 2007⁶, is analyzed. Again, the results clearly favor the “Balassa-Samuelson effect” hypothesis. Figure 3 is quite convincing.

Figure 3: Revising the “Balassa-Samuelson effect” (189 countries, 2007)



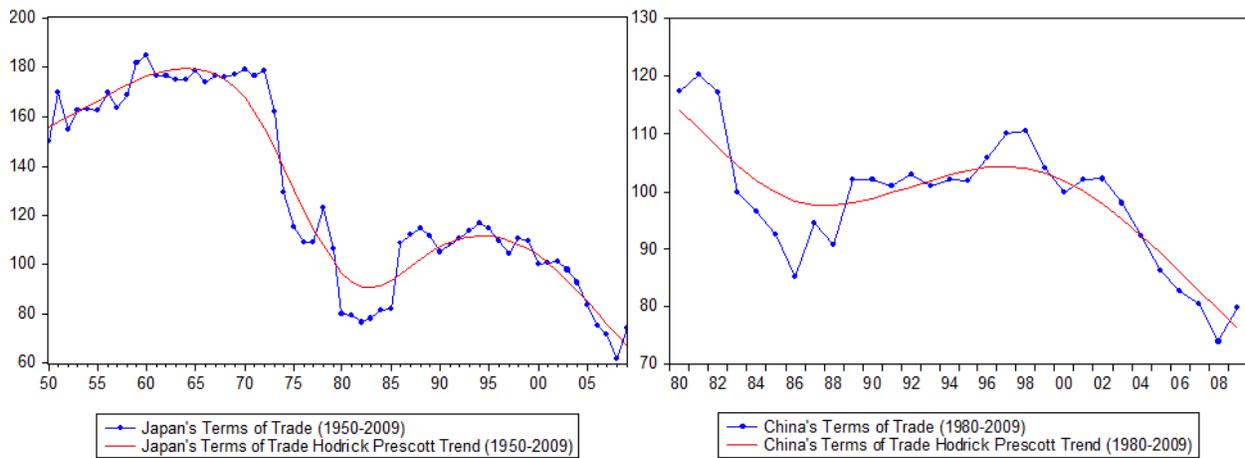
The terms of trade dynamics

During all this subsection of the appendix, the data comes from the *International Financial Statistics* and the *World Economic Outlook*, Both from the International Monetary Fund; and from the World Bank's *World Development Indicators*.

As stated before, China and Japan have suffered a decreasing trend in their terms of trade during most of their developing process. Evidence is provided in Figure 4.

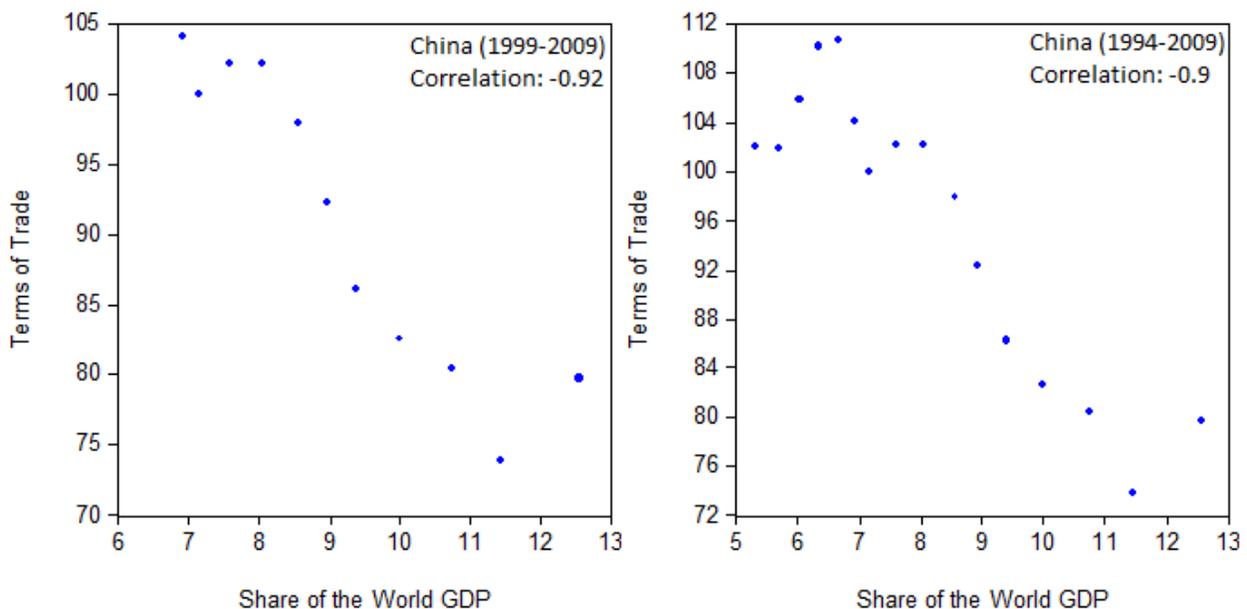
⁶ for Bahrain and Serbia data from 2006 and 2005 respectively is used. These are the last years for which these stats were available.

Figure 4: The Terms of trade dynamics for Japan and China



The most important deterioration of China's terms of foreign trade in the last thirty years has been taking place during the last decade. In 2009 China's terms of trade were a 23.42% lower than in 1999. This is not surprising since probably never before had a country grown that much in absolute terms. In the last decade, China's share of the world GDP went from a 6.9% in 1999 to a 12.56% in 2009! Even more, the correlation between China's terms of trade and its share of the world GDP in this decade has been -0.92. These results do not change much if we take, for example, 1994 as the starting year. The share of the world GDP went from a 5.3% to the same 12.56%, the terms of trade decreased a 21.86% and the correlation was -0.9. All this in fact is illustrated in Figure 5.

Figure 5: The Relation between Economic Growth and the Terms of Trade in China (1994-2009)



For similar analysis in Japan, the right choice is definitely the 1970-1980 period. Between 1970 and 1980, Japan's share of the world GDP went from a 3.53% to a 7.9% (faster than ever). Japan's terms of trade were a 55.41% lower in 1980 than in 1970, while the correlation between the two variables (share of the world GDP and terms of trade) was -0.95. If for widening the analysis 1985 is chosen as closing year, Japan's share of world GDP in this year was a 9.24% while its terms of trade had decreased by a 54.12% from their 1970 levels. Finally, the correlation between the two variables was -0.96. For these results see Figure 6.

Figure 6: The Relation between Economic Growth and the Terms of Trade in Japan (1970-1985)

